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# A survey about postoperative delirium in older patients among nurses and anaesthetists: implications for future practice and policy

## Abstract

**Background** Postoperative delirium is a major complication associated with anaesthesia and surgery, more commonly seen in older people. **Aims** The aims of this study were to explore the knowledge and understanding of anaesthetists and nurses involved in anaesthesia through their responses to two case scenarios of postoperative delirium experienced by older people. **Methods** A 30-item online survey was sent to 500 potential respondents. **Results** Two hundred and twenty-six practitioners from Australia, New Zealand and Scotland responded. Most had no workplace protocols for anaesthesia planning in older people. There was substantial variability in practice in relation to postoperative delirium screening, detection, prevention and management. **Conclusions** Improvements in education and awareness, together with a more coherent approach, for example, as recommended in the European Society of Anaesthesiology Guidelines, could help to reduce the impact of postoperative delirium in older people. This should be combined with ongoing research into perioperative optimisation of detection, prevention and management of postoperative delirium.

## Keywords

among, patients, older, delirium, anaesthetists:, nurses, implications, survey, future, practice, policy, postoperative, about

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# A survey about postoperative delirium in older patients among nurses and anaesthetists: implications for future practice and policy

**Running head:** Survey of practice on POD in older patients

**Article category:** Research paper

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## **Declaration of interest**

The authors report no declaration of interest.

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**Victoria Traynor:** is Professor in Nursing and the Founding Director of Aged and Dementia Health Education Research (ADHERE). Her research area focuses on working with older people and family carers and healthcare practitioners delivering aged and dementia care services.

**Sheila Rodgers:** has a background in Acute Care with an emphasis on the care of Older people. Her research interest is in evidence-based practice and the links between research and practice with main methodological expertise in quantitative approaches and complex interventions.

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**Alasdair Waite:** is a Consultant Anaesthetist at the Royal Infirmary of Edinburgh. His research interest is in sedation recovery and other related outcomes.

**Alasdair MacLulich:** is active clinically, working in acute geriatric medicine and acute orthogeriatrics. He has a keen interest in improving the detection and management of delirium and dementia in acute hospital patients and leads the regional 'Delirium and Dementia Implementation Group'.

**Irwin Foo:** is a consultant anaesthetist ay NHS Lothian. His research interest is in delirium and other cognitive disorders.

56   **Abstract**

57   **Purpose:** Postoperative delirium (POD) is a major complication associated with anaesthesia  
58   and surgery, more commonly seen in older people. The aims of this study were to explore  
59   the knowledge and understanding of anaesthetists and nurses involved in anaesthesia  
60   through their responses to two case scenarios of POD experienced by older people.

61   **Methods:** A 30-item online survey was sent to 500 potential respondents.

62   **Findings:** Two hundred and twenty-six practitioners from Australia, New Zealand and  
63   Scotland responded. Most had no workplace protocols for anaesthesia planning in older  
64   people. There was substantial variability in practice in relation to POD screening, detection,  
65   prevention and management.

66   **Conclusion:** Improvements in education and awareness, together with a more coherent  
67   approach e.g. as recommended in the European Society of Anaesthesiology Guidelines could  
68   help to reduce the impact of POD in older people. This should be combined with ongoing  
69   research into perioperative optimisation of detection, prevention and management of post-  
70   operative delirium.

71   **Keywords:** Postoperative delirium, anesthesia protocols, older people, survey, cognition,

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## 1. Introduction and Literature review

Delirium is perhaps the most common age-related postoperative complication (Mohanty et al., 2016) affecting 13-79% of older people, depending on the population group and type of surgery (Chang et al., 2008; Smith et al., 2017). It was only recently that post-operative delirium (POD) was acknowledged as a major postoperative complication (Igwe et al., 2019; Zenilman, 2017). Postoperative delirium might start in the recovery room and occur up to five days after surgery. In the postoperative care of older people, screening, detection, prevention and management of delirium is critical as delirium can lead to functional decline, increased average length of stay and increased risk of relocation to a nursing home (Dasgupta & Dumbrell, 2006). Patients are less likely to be able to return home and live independently after surgery if they experience POD (Griffiths et al. 2014). Additionally, POD is associated with higher mortality and a prolonged inpatient stay (Griffiths et al., 2014).

Multiple pre- and postoperative triggers are implicated in POD, including haematocrit less than 30%, hypotension, hypoalbuminaemia, acute infection, pain, and environmental factors such as room changes and absence of a clock or watch (Chang et al., 2008; McCusker et al., 2001; Nie et al., 2012). Established predisposing factors include dementia, aged 65+, other co-morbidities, visual or hearing impairment, and living in a nursing home (Smith et al., 2017). Use of certain medications increase the risk of delirium e.g. anticholinergic drugs. (Egberts et al., 2017). Post-operative delirium presents as hypoactive, hyperactive or as mixed form delirium. In hypoactive POD patients show decreased alertness, motor activity and anhedonia while in hyperactive POD patients are agitated and combative (Aldecoa et al., 2017).

Other conditions also present symptoms similar to POD which leads to misdiagnosis. These conditions include dementia, emergence delirium, and postoperative cognitive dysfunction (POCD). POCD is defined as a significant decline in cognitive functions following surgery in comparison to preoperative functions (Sawamura, 2017).

A preliminary review of resources targeted at POD within the preoperative clinical protocols from local service providers found that screening, detection, prevention and management of POD in older people was not specifically addressed. Colleagues in our networks confirmed this was not an unexpected finding and a common omission. This is a barrier to implementation of effective POD care for older people. Despite the clinical significance of POD, it is frequently undetected and misdiagnosed as dementia or another psychiatric disorder (Aldecoa et al., 2017; American Geriatrics Society, 2015b). As the number of older people undergoing surgery increases, cases of POD in older people will increase. This highlights the potential increased impact on the use of healthcare resources. It is important to understand current anaesthetic opinions and practices for older people in order to develop services for screening, detection, prevention and management of POD in older people.

The POD in older adults best practice statement from the American Geriatrics Society (Samuel, 2015) describes recommendations by an expert panel on best practices in relation to POD in older adults. Some of these recommendations include implementation of formal education programs with ongoing refresher sessions as well as the use of processed electroencephalographic monitors of anaesthetic depth during intravenous sedation or general anaesthesia of older patients to reduce postoperative delirium. Other recommendations include avoidance of polypharmacy (five or more) and medications that

induce POD in older adults such as anticholinergic medications, sedative-hypnotics, and meperidine and the use of adequate pain control. In terms of the use of antipsychotics, there is insufficient evidence for or against its use prophylactically in older surgical patients however, it is recommended that in all circumstances, treatment with antipsychotics should only be employed in agitated patients who maybe threatening substantial harm to self or others and only if behavioural interventions have failed or are not possible, and ongoing use should be evaluated daily with in-person examination of patients and not in otherwise calm patients (Samuel, 2015).

### **1.1. Aims**

The aims of this study were to explore the knowledge and understanding of anaesthetists and nurses involved in anaesthesia through their responses to two case scenarios of POD experienced by older people. We ascertained whether they used POD guidelines and protocols in these scenarios.

### **1.2. Design**

The study was an online survey adapted from a previous study of anaesthetic practitioners (P. K. Jildenstål et al., 2014) which sought to gain insights in Sweden on protocols and practices for risk assessment, detection and management of postoperative cognitive side effects and the use of electroencephalogram (EEG) based depth of anaesthesia monitoring among anaesthesia practitioners. The Swedish survey was made up of three sections, including questions about the subjective preferences of respondents, their anaesthetic routines and practices and their responses to four case scenarios related to postoperative cognitive dysfunction, POD, emergence agitation and awareness.



We abbreviated the Swedish survey (P. K. Jildenstål et al., 2014) and adapted it for use with our study population. Face and content validity of the present survey were assessed and established by a multidisciplinary team comprising of an anaesthetist, a medical scientist, three nurses, a pharmacist, and a public health specialist. The face validity was assessed by inviting the above-named group to read through the survey and provided feedback on each question. The content validity was assessed by the research team and other experts in the field. Comments from both the content and face validity were noted, and amendments made to the survey. Some of the questions from the original survey were modified and some were deleted based on these recommendations. Cronbach's Alpha was calculated to determine the reliability of the final questionnaire (0.833).

The final survey consisted of questions in four sections:

1. Demographics
2. Workplace practices and protocols in relation to anaesthesia in older people
3. Subjective preferences on factors that influence choice of anaesthetic plan for older people; and
4. Two case scenarios focused on POD (see Table 1).

There were 30 questions in the survey. Response formats varied depending on the type of question and comprised Likert scales, fixed category responses and free text responses. The study population was defined as practising anaesthetists and anaesthetic nurses. No geographical limits were placed on respondents though promotion of the survey focused on the professional networks of the authors in Australia, New Zealand and Scotland.

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## 168       **2. Methods**

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170   A convenience sample was recruited in Australia, New Zealand and Scotland from a pool of  
171   500 anaesthetists and anaesthetic nurses. Due to the potential lack of interest in the topic  
172   among the potential participants and a low response rate, convenience sampling was used  
173   to enable easier accessibility of potential participants (Etikan et al., 2016).

174   Email invitations to complete the survey were sent to anaesthetists and anaesthetic nurses  
175   between September 2016 and March 2017. In Australia, an email invitation was sent to  
176   attendees of the 2016 Australian and New Zealand College of Anaesthetists (ANZCA)  
177   Perioperative Special Interest Group meeting in association with the Australian and New  
178   Zealand Society for Geriatric Medicine (Perioperative Special Interest Group Meeting 2016  
179   2016) as well as to the anaesthetic departments of one metropolitan and one regional  
180   hospital. In Scotland, nurses and anaesthetists were recruited from 25 of the 29 NHS  
181   Scotland Anaesthetic Departments after email invitations to complete the survey were sent  
182   to all departments. A convenient sampling method was employed in this study in order to  
183   provide a snapshot of current practices in order to inform further research on clinicians'  
184   practice in relation to POD care in older patients.

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186   Data were analysed using IBM SPSS Statistics for Windows, Version 21.0. (IBM Corp.,  
187   Armonk, NY, USA). Frequencies and descriptive statistics of respondent characteristics were  
188   performed.

189 **Table 1:** Case scenarios presented to participants

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**CASE SCENARIO 1:**

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*“An 82-year-old sustains a hip fracture and undergoes an emergency surgical procedure. Preoperative oxygen saturation is 88%, blood pressure, 160/100 and pulse 110. She has a fever, is agitated and confused and has difficulties giving clear answers to questions asked of her. Her postoperative pain is relieved with opioids. She develops postoperative delirium.”*

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**CASE SCENARIO 2:**

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*“The patient, who is a former warehouse worker, aged 65, with moderate alcohol consumption and previous coronary artery surgery. The patient also had a minor stroke, but without residual impact. Recently he has undergone surgery for stomach cancer and is now returning four weeks later for a planned follow-up. He was diagnosed with postoperative cognitive dysfunction (POCD). He is upset, angry and sad about the inherent frustration of not being able to plan the day as he had previously been able to. He explains that his memory is short, it fails and that it is taking him time to figure out what he planned to do, or not do. He requires treatment of his cognitive symptoms.”*

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### 3. Results

#### *Respondent characteristics*

A total of 226 respondents answered the survey in part or completely giving an estimated response rate of 45% from the pool of 500 potential participants. The respondents comprised 19 registered nurses and 198 medical anaesthetists. Demographic and clinical practice characteristics data of respondents were reported for only valid data (completed questions) as mean (SD) and number (%) (Table 2).

**Table 2:** Demographic/characteristics of participants

Demographic of participants	N = 226 (%)
<b>Gender</b>	
Male	115 (52)
Female	106 (48)
Age (mean $\pm$ SD)	42 $\pm$ 10
<b>Position</b>	
Registered Nurse	19 (8.8)
Medical (anaesthetist specialist)	198 (91.2)
<b>Highest academic qualification</b>	
Bachelor's degree	139(62.9)
Post-Graduate certificate	37 (16.7)
Masters	37 (16.7)
PhD	8 (3.62)
<b>Country</b>	
Scotland	128 (58.2)
Australia	79 (35.9)
NZ	13 (5.9)

204 *Influence on choice of anaesthesia plan and depth of anaesthesia monitoring*

205 More than 80% of the respondents stated that there were no workplace protocols available  
 206 for anaesthesia plans for older people and 59% do not use clinical guidelines/pathways to  
 207 inform their clinical practice when anaesthetising older people. Respondents were asked  
 208 about factors influencing their choice of an anaesthetic plan at the time of preoperative  
 209 assessment (Table 3). They were also asked whether depth of anaesthesia monitoring  
 210 equipment is used. Only 65% of respondents used such equipment in the two proposed  
 211 scenarios.

212

213 *Care of a patient with postoperative delirium (POD) – Case Scenarios 1*

214 Respondents were presented with Case Scenario 1 (Table 1) representing a typical patient  
 215 with emergent delirium and asked whether they would transfer 'Case Study 1' patient to a  
 216 high dependency unit (HDU) with an increased staffing ratio if symptoms persisted for over  
 217 2 hours. Sixty-one respondents (61.0%) answered 'yes' and 39 (39.0%) answered 'no'. in  
 218 addition, ninety-five (82.6%) respondents answered 'yes' to using neuroleptics including  
 219 butyrophenones (haloperidol) while 28 (32.6%) answered 'yes' and 58 (67.4%) answered  
 220 'no', to administering a benzodiazepine such as midazolam when the patient in Case  
 221 Scenario 1 becomes 'unsettled' and displays 'psychomotor agitation'.

222

223 *Care of a patient with postoperative cognitive disorder (POCD) – Case Scenario 2*

224 Respondents were presented with Case Scenario 2 (Table 1), who was a patient with typical  
 225 POCD. They were asked to respond to questions about whether in their workplace there

was a protocol in relation to POCD available, whether the patient had her cognitive function formally assessed and whether feedback about the long-term cognitive status of patients is provided to anaesthetists. Most respondents had no protocol for POCD (n=128, 95.2%) and, in most instances, patients like the one in Case Scenario 2 do not have their cognitive function formally assessed using an assessment tool (n=81, 65.3%). Further, most respondents reported that they would not receive feedback about the longer-term cognitive status of patients (n=121, 94.5%).

**Table 3:** Factors influencing the anaesthesia plan at pre-op assessment

Factors	Strongly Agree/Agree	Disagree/ Strongly disagree
Patient's wish	133(97.8%)	3 (2.2%)
Risk of postoperative nausea	134 (97.8%)	3 (2.2%)
Risk of postoperative pain	136(100%)	0(0%)
Risk of postoperative delirium (POD)	120 (84.2%)	16 (11.8%)
Risk of postoperative cognitive dysfunction (POCD)	111 (81.6%)	25(18.4%)
Risk of cardiac events	136 (100%)	0(0%)
Risk of respiratory effects	136 (100%)	0(0%)

#### 4. Discussion

The findings from this study identified that there is a lack of workplace protocols in use for the management of POD, especially for older people in the clinical areas of the respondents. This study also provides preliminary insights into how the clinical practice of anaesthetists and anaesthetic nurses could be enhanced to reduce and treat POD among older people. The majority of the respondents came from three different countries. Comparing practices across different countries would be a valuable outcome from this study. However, clear international comparisons were not possible due to low numbers from New Zealand (n=13). The findings in this study about the availability of workplace protocols for anaesthesia plans for older people and the use of clinical guidelines/ pathways to inform their clinical practice were similar to a comparable study where 80% had no protocol for anaesthesia plans; 93% were unaware of a protocol for the monitoring and assessment of POD; 59% did not use clinical guidelines/pathways to inform their clinical practice with older people and 89% had no pharmacological intervention protocols for POD in older people (P. K. Jildenstål et al., 2014). Our study yielded comparable findings with respect to the use of clinical protocols for POD.

Although two major countries were represented in the current survey (Australia and Scotland), clinical practices as shown in the responses were similar and there was no significant difference. Results from this survey showed that at pre-op assessment, 84% of the respondents considered the risk of POD as an important factor that influences their choice of anaesthesia plan. However, this consideration and number does not translate to

the development and use of POD protocols within the workplace. This could be due to the lack of consensus on the management of POD using pharmacologic or non-pharmacologic interventions (Hshieh et al., 2015; Tremblay & Gold, 2016). The use of clinical guidelines in anaesthesia plans for older people is important in understanding anaesthetic practice in clinical settings. The absence of workplace guidelines implies that anaesthetists and anaesthetic nurses are either less aware of POD and its associated predictive factors or do not perceive it to be a significant problem. In the clinical setting, complications such as post-operative organ failure or common symptoms, such as pain are considered as important and managed effectively. It is imperative that POD is adequately addressed in a similar manner to other postoperative complications to reduce negative impacts on patient outcomes and improve clinical practices. In addition, routine monitoring of POD needs to be implemented globally (Zenilman, 2017).

More than half of the respondents (55%) stated there was no protocol in place to assess for POD. Of the respondents who answered 'yes' to using clinical guidelines/pathways to inform their clinical practice with older people, 30% specified the clinical guideline they used which were made up of 15 publicly available resources. There were local resources, but these were only available to two respondents. A review of the guidelines reported by respondents found that only 4 focused on POD (16%) (White et al.), including three mentions of the Association of Anaesthetists of Great Britain and Ireland (AAGBI) Perioperative Care of the Elderly 2014 publication.

Depth of anaesthesia (DOA) monitoring is an important consideration in the detection, prevention and management of POD (P. Jildenstål, 2014) and 65% of respondents used DOA monitoring equipment with general anaesthesia. Dose adjustment in older people is



challenging, with overall lower doses being required but also increased variability in outcomes. Thus, relative overdoses and significant hypotension often occur (Griffiths et al., 2014). As a way of mitigating this risk, DOA monitoring is becoming more commonplace, but it is not used universally. Its lack of availability and implementation in some clinical settings was attributed to its high cost (Steiner, 2017).

Drugs are a potentially modifiable risk factor for POD. The American Geriatrics society recommends avoiding the use of anticholinergics in older adults who are at an increased risk of delirium because of their potential of inducing or worsening delirium (American Geriatrics Society, 2015a). With respect to drug prophylaxis for delirium, guidelines from the European and American specialist associations specifically discourages the use of prophylactic antipsychotics because of the lack of supportive evidence (Aldecoa et al., 2017; American Geriatrics Society, 2015b; Mohanty et al., 2016). A review of delirium and antipsychotics identified haloperidol as the most frequently used and best studied antipsychotic medication for delirium (Markowitz & Narasimhan, 2008). However, in the US and UK, there is no approval labelling for this indication and the evidence base to guide haloperidol dosing in delirium management is weak (Chew et al., 2008; Fukata et al., 2014; National Institute for Health and Clinical Excellence, 2010). Many of the relevant guidelines for the perioperative management of older people recommend antipsychotics like haloperidol as second-line therapy (AHMAC, 2006; Aldecoa et al., 2017; American Geriatrics Society, 2015b; Mohanty et al., 2016). In the current study, more than 80% of the respondents chose haloperidol as the first-line treatment in a POD scenario. In addition, a higher proportion of respondents did not have a workplace protocol for anaesthesia plans for older people which could explain their first choice of sedation plan. In the absence of a workplace protocol for

306 anaesthesia plans for older people, haloperidol was a first choice in sedating older people  
307 with POD (Agar et al., 2017). In the perioperative setting, it is important that these drugs are  
308 only used to manage POD when there is no alternative and only if individuals become a  
309 danger to themselves (Agar et al., 2017).

310 There are organisational and financial implications as a result of increased average length of  
311 stay due to POD for older people. This might be alleviated with improved screening,  
312 detection, prevention and management of POD which was shown to reduce hospital stay by  
313 a mean of 3.42 days (Naughton et al., 2005). The financial costs associated with increased  
314 average length of stay are well recognised (Leslie & Inouye, 2011) as they require a higher  
315 proportion of nursing care and other staff resources than is usually provided (Yevchak et al.,  
316 2012) which in turn, may impact on quality of care on other patients in the vicinity of  
317 individuals with delirium.

318 Limitations of this study include the low response rates to some of the questions and by  
319 some groups (anaesthetic nurses) which also meant that analysis by specific groups could  
320 not be analysed without the risk of a Type II error (Etikan et al., 2016) as well as making it  
321 difficult to generalise study outcome and clinical practice in relation to the nurse populaion. Larger  
322 studies would go some way to addressing this issue. In addition, no reliability testing was  
323 conducted on the survey. This meant that even though, content and face validity of the  
324 survey were completed, the reliability of the questions using a test-retest approach was not  
325 conducted. There is also a risk that using non-random sampling method resulted in self-  
326 selecting samples with a particular characteristic bias which could limit the generalisability  
327 of results. Future studies need to target more countries through relevant professional  
328 organisations. Researchers could also take advantage of the recent interest in POCD among

anaesthetists with the publication of post-operative care guidelines for delirium in several countries (Aldecoa et al., 2017; American Geriatrics Society, 2015b; Igwe et al., 2019; Steiner, 2017). When this study was commenced, post-operative guidelines for delirium had not gained such a large international profile. There is also the possibility of potential bias created from the wording of the questions. In addition, consultations with clinicians in future studies are imperative in order to ensure questions are appropriate and relevant and thus further reduce bias.

## **5. Conclusion and further research**

This paper contributes to the understanding of postoperative delirium POD care for older people. We found a reasonable level of awareness about best practice POD care among the respondents but, at the same time, respondents overwhelmingly agreed with the statement that POD is neglected in anaesthesia. Given that 40% of POD cases are found to be preventable (Aldecoa et al., 2017) we can conclude that being aware of best practice does not necessarily translate into implementation of evidence based strategies to detect, prevent and manage POD. This study identified a major gap in the use of policies to guide best practice POD care. Patient outcomes might be improved by more consistent implementation of protocols, guidelines or pathways to detect, prevent and manage POD. Some of the more commonly used screening tools employed in the detection of POD include the Confusion Assessment Method (CAM) and 4 'A's Test (4AT) (Shenkin et al., 2019). It is imperative that postoperative care by clinicians consistently and incorporate these tools. In addition, collaboration between nurses and anaesthetists is imperative. This collaboration also needs to be extended in a multidisciplinary manner in the pre- and post-care of older surgical patients. The findings from our study demonstrate the need for further knowledge

353 translation research to study how to increase the use of guidelines for POD prevention and  
354 management by anaesthetists and anaesthetic nurses.

355

#### 356 **Key points**

- 357 1. There is limited focus on POD guidelines and anaesthesia planning protocols in  
358 surveyed clinical settings
- 359 2. Older patients are at an increased risk of developing POD with a prevalence of about  
360 50% in this group
- 361 3. There is a lack of awareness and education around POD incidence
- 362 4. Post-operative delirium (POD) was recently recognised as a major postoperative  
363 complication

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#### 365 **Ethical Permissions**

366 Ethical approval for the study was granted by the relevant Human Research Ethics  
367 Committees in Australia. The study was also reviewed by NHS Lothian Research Ethics  
368 Committee and by NHS Lothian Research and Development Office. Both agreed that no  
369 additional approvals from them were required for the study to be conducted in Scotland as  
370 this study was only conducted with staff only.

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468 **Table 1:** Case scenarios presented to participants

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**CASE SCENARIO 1:**

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*“An 82-year-old sustains a hip fracture and undergoes an emergency surgical procedure. Preoperative oxygen saturation is 88%, blood pressure, 160/100 and pulse 110. She has a fever, is agitated and confused and has difficulties giving clear answers to questions asked of her. Her postoperative pain is relieved with opioids. She develops postoperative delirium.”*

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**CASE SCENARIO 2:**

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*“The patient, who is a former warehouse worker, aged 65, with moderate alcohol consumption and previous coronary artery surgery. The patient also had a minor stroke, but without residual impact. Recently he has undergone surgery for stomach cancer and is now returning four weeks later for a planned follow-up. He was diagnosed with postoperative cognitive dysfunction (POCD). He is upset, angry and sad about the inherent frustration of not being able to plan the day as he had previously been able to. He explains that his memory is short, it fails and that it is taking him time to figure out what he planned to do, or not do. He requires treatment of his cognitive symptoms.”*

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471 **Table 2:** Demographic/characteristics of participants

Demographic of participants	N = 226 (%)
<b>Gender</b>	
Male	115 (52)
Female	106 (48)
Age (mean $\pm$ SD)	42 $\pm$ 10
<b>Position</b>	
Registered Nurse	19 (8.8)
Medical (anaesthetist specialist)	198 (91.2)
<b>Highest academic qualification</b>	
Bachelor's degree	139(62.9)
Post-Graduate certificate	37 (16.7)
Masters	37 (16.7)
PhD	8 (3.62)
<b>Country</b>	
Scotland	128 (58.2)
Australia	79 (35.9)
NZ	13 (5.9)

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474 **Table 3:** Factors influencing the anaesthesia plan at pre-op assessment

Factors	Strongly Agree/Agree	Disagree/ Strongly disagree
Patient's wish	133(97.8%)	3 (2.2%)
Risk of postoperative nausea	134 (97.8%)	3 (2.2%)
Risk of postoperative pain	136(100%)	0(0%)
Risk of postoperative delirium (POD)	120 (84.2%)	16 (11.8%)
Risk of postoperative cognitive dysfunction (POCD)	111 (81.6%)	25(18.4%)
Risk of cardiac events	136 (100%)	0(0%)
Risk of respiratory effects	136 (100%)	0(0%)

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